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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,073	01/12/2005	Makoto Tsuneoka	2004 1597A	6358

513 7590 05/29/2007

WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER	
GUSSOW, ANNE	

ART UNIT	PAPER NUMBER
1643	

MAIL DATE	DELIVERY MODE
05/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,073	TSUNEOKA ET AL.	
	Examiner	Art Unit	
	Anne M. Gussow	1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *46-49 and 58-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *46-49 and 58-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *sequence alignment*.

DETAILED ACTION

1. Claims 26-45 and 50-57 have been cancelled.

Claims 46-48 have been amended.

Claims 58-69 have been added.

2. Claims 46-49 and 58-69 are pending and under examination.

3. The following Office Action contains NEW GROUNDS of rejections.

Objections Withdrawn

4. The objections to the specification for minor informalities and use of trademarks has been withdrawn in view of applicant's amendment to the specification.

Rejections Withdrawn

5. The rejection of claims 46-49 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in view of the amendments to the claims.

6. The rejection of claim 49 under 35 U.S.C. 112, first paragraph, as lacking enablement to use the invention for deposit of biological materials is withdrawn in

view of the evidence of deposit provided by applicant and the statements that all assurances will be met.

7. The rejection of claims 46 and 47 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in view of applicant's amendments to the claims.

8. The rejection of claim 46 under 35 U.S.C. 102(b), as being anticipated by Ota, et al. is withdrawn in view of applicant's amendments to the claims.

9. The rejection of claims 47 and 48 under 35 U.S.C. 103(a) as being unpatentable over Ota, et al. in view of Campbell is withdrawn in view of applicant's amendments to the claims.

Response to Arguments/NEW GROUNDS of REJECTIONS

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 46-49, 58-61, 64-65, and 68-69 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in

such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

a.) Claim 46 recites an agent for detecting a cancer, which comprises water and an antibody that specifically binds to a peptide having an amino acid sequence designated by SEQ ID No. 1 or a portion thereof. The limitation of water is not supported in the specification.

b.) Claim 59 recites the agent according to claim 46, further comprising a second antibody having a label that specifically binds to the peptide or portion thereof of claim 46. The limitation of a second antibody having a label is not supported in the specification.

c.) Claims 60, 64, and 68 recite the limitations wherein the antibody is immobilized on a support. The limitation of immobilized on a support is not supported in the specification.

d.) Claims 61, 65, and 69 recite the limitations wherein the antibody has a label. The limitation of the label is not supported in the specification.

The amendment filed April 11, 2007 points to support in the specification for the amendments to the claims. Support for water as a component of the claimed agent is said to be found on page 40, lines 28-32. This is not found to be supporting because, page 40 lines 28-32 discuss histostaining of a formalin-fixed and paraffin-embedded block of tissue. Cursory review of the specification did not find any support for water. Page 40 lines 10-15 disclose dialyzing the

antibody against a Tris solution and page 41 lines 25-27 disclose diluting the antibody in a PBS solution, neither of which solutions are water. Support for a second antibody having a label and an immobilized support is said to be found on pages 41-42 of the specification. This is not found to be supporting because page 41 lines 32-33 discuss a biotinylated rabbit anti-mouse IgG antibody but do not mention if this antibody is a first or second antibody. Also, on page 42 lines 17-22 binding of the Mina53 antibody to horseradish peroxidase is described but not biding to an immobilized support. Cursory review of the specification did not find any support for a second antibody having a label or an antibody immobilized on a support. Applicant is required to provide specific support for the amended claims.

Should applicant amend the claims to remove the claimed new matter, art rejections currently withdrawn may be reinstated.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 46-47, 59-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota, et al. (as cited in previous office action) in view of Campbell (as cited in previous office action) and further in view of Wu, et al. (US PAT 5,547,928) as evidenced by the Sigma catalog (1998).

The claims recite an agent for detecting cancer which comprises water and an antibody that specifically binds to a peptide having an amino acid sequence designated by SEQ ID No.1 or a portion thereof, wherein the antibody is a monoclonal antibody, further comprising a second antibody having a label that specifically binds to the peptide or portion thereof of claim 46, wherein the antibody is immobilized on a support, wherein the antibody has a label. The claims also recite an antibody that specifically binds to a peptide having an amino acid sequence designated by SEQ ID No. 2 or a portion thereof, wherein the antibody is a monoclonal antibody, wherein the antibody is immobilized on a support, wherein the antibody has a label. The claims also recite an antibody that specifically binds to a peptide having an amino acid sequence designated by SEQ ID No. 3 or a portion thereof, wherein the antibody is a monoclonal antibody, wherein the antibody is immobilized on a support, wherein the antibody has a label.

Ota, et al. teach a polyclonal antibody that binds to the sequence of SEQ ID No. 10739, which is identical to the polypeptide encoded by the polynucleotide of SEQ ID No. 1 of the instant application (see sequence alignment in previous office action). Ota, et al. do not teach an agent which comprises water. Ota, et al. do not teach a monoclonal antibody. Ota, et al. do not teach an antibody immobilized on a support or an antibody having a label. These deficiencies are made up for in the teachings of Campbell and Wu, et al as evidenced by the Sigma catalog.

Campbell teaches that it is customary for any group working on a macromolecule to both clone the genes coding for it and make monoclonal antibodies to it (page 29, last paragraph) and that hybridomas are used to produce monoclonal antibodies (page 2, 1st full paragraph).

Wu, et al. teach sandwich immunoassay techniques in which two antibodies are used, one immobilized onto a solid support and one free in solution and labeled with a detectable chemical compound (bottom of column 7 to top of column 8).

The Sigma catalog teaches that antibodies are supplied in phosphate buffered saline (New: Anti-actin, page 3) or lyophilized to be reconstituted with phosphate buffered saline (lyophilized AIA, page 198). The saline solution would comprise water.

It would have been prima facie obvious to one of ordinary skill in the art at the time the claimed invention was made to have produced a monoclonal antibody in a hyrbidoma as taught by Campbell to the protein of Ota, et al. in

view of the immunoassay of Wu, et al. in a solution comprising water as evidenced by the Sigma catalog.

One of ordinary skill in the art would have been motivated to and had a reasonable expectation of success to have produced a monoclonal antibody in a hybridoma as taught by Campbell to the protein of Ota, et al. in view of the immunoassay of Wu, et al. because Campbell teaches advantages to using a monoclonal antibody over a polyclonal antibody including increased specificity and loss of cross reactivity (pages 5-7 and table 1.1). It is obvious that once someone has a monoclonal antibody they would have a hybridoma producing such an antibody. Further, Ota, et al. teach the polyclonal antibody could be used in Western blotting, immunoprecipitation, or ELISA (paragraph 57) and one of skill in the art would understand that the sandwich immunoassay techniques of Wu, et al. are an ELISA. Additionally, since the protein sequence of SEQ ID Nos. 2 and 3 are 86 and 87.7% similar to SEQ ID No. 1 respectively (see sequence alignments) and share regions of identity, one of skill in the art would envisage that the antibody that binds to the protein of SEQ ID No. 1 would also bind to the proteins of SEQ ID Nos. 2 and 3. Thus, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to have used the protein of Ota, et al. to make a monoclonal antibody using a hybridoma in view of Campbell for an immunoassay in view of Wu, et al in a solution comprising water as evidenced by the Sigma catalog.

Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the claimed invention was made, as evidenced by the references.

Conclusion

15. No claims are allowed.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne M. Gussow whose telephone number is

(571) 272-6047. The examiner can normally be reached on Monday - Friday 8:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on (571) 272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anne M. Gussow, Ph.D.

May 17, 2007

LARRY R. HELMS, PH.D.
SUPERVISORY PATENT EXAMINER

Seq ID 2 translation

<!--StartFragment-->RESULT 7
AAB92553
ID AAB92553 standard; protein; 464 AA.
XX
AC AAB92553;
XX
DT 26-JUN-2001 (first entry)
XX
DE Human protein sequence SEQ ID NO:10739.
XX
KW Human; primer; detection; diagnosis; antisense therapy; gene therapy.
XX
OS Homo sapiens.
XX
PN EP1074617-A2.
XX
PD 07-FEB-2001.
XX
PF 28-JUL-2000; 2000EP-00116126.
XX
PR 29-JUL-1999; 99JP-00248036.
PR 27-AUG-1999; 99JP-00300253.
PR 11-JAN-2000; 2000JP-00118776.
PR 02-MAY-2000; 2000JP-00183767.
PR 09-JUN-2000; 2000JP-00241899.
XX
PA (HELI-) HELIX RES INST.
XX
PI Ota T, Isogai T, Nishikawa T, Hayashi K, Saito K, Yamamoto J;
PI Ishii S, Sugiyama T, Wakamatsu A, Nagai K, Otsuki T;
XX
DR WPI; 2001-318749/34.
XX
PT Primer sets for synthesizing polynucleotides, particularly the 5602 full-
PT length cDNAs defined in the specification, and for the detection and/or
PT diagnosis of the abnormality of the proteins encoded by the full-length
PT cDNAs.
XX
PS Claim 8; SEQ ID NO 10739; 2537pp + Sequence Listing; English.
XX
CC The present invention describes primer sets for synthesising 5602 full-
CC length cDNAs defined in the specification. Where a primer set comprises:
CC (a) an oligo-dT primer and an oligonucleotide complementary to the
CC complementary strand of a polynucleotide which comprises one of the 5602
CC nucleotide sequences defined in the specification, where the
CC oligonucleotide comprises at least 15 nucleotides; or (b) a combination
CC of an oligonucleotide comprising a sequence complementary to the
CC complementary strand of a polynucleotide which comprises a 5'-end
CC sequence and an oligonucleotide comprising a sequence complementary to a
CC polynucleotide which comprises a 3'-end sequence, where the
CC oligonucleotide comprises at least 15 nucleotides and the combination of
CC the 5'-end sequence/3'-end sequence is selected from those defined in the
CC specification. The primer sets can be used in antisense therapy and in
CC gene therapy. The primers are useful for synthesising polynucleotides,
CC particularly full-length cDNAs. The primers are also useful for the
CC detection and/or diagnosis of the abnormality of the proteins encoded by
CC the full-length cDNAs. The primers allow obtaining of the full-length
CC cDNAs easily without any specialised methods. AAH03166 to AAH13628 and
CC AAH13633 to AAH18742 represent human cDNA sequences; AAB92446 to AAB95893
CC represent human amino acid sequences; and AAH13629 to AAH13632 represent
CC oligonucleotides, all of which are used in the exemplification of the

CC present invention
XX
SQ Sequence 464 AA;

Alignment Scores:

Pred. No.:	2.84e-183	Length:	464
Score:	1884.50	Matches:	353
Percent Similarity:	86.0%	Conservative:	47
Best Local Similarity:	75.9%	Mismatches:	64
Query Match:	76.0%	Indels:	1
DB:	4	Gaps:	1

US-10-509-073C-2 (1-1398) x AAB92553 (1-464)

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Db          1 MetProLysLysAlaLysProThrGlySerGlyLysGluGluGlyProAlaProCysLys 20

Qy         61 CGGGTGAAGGAGGAGCTGCCTGAAACGCTTTCTGTATTAAACTTTGACAGCCCCAGTAGT 120
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Db         21 GlnMetLysLeuGluAlaAlaGlyGlyProSerAlaLeuAsnPheAspSerProSerSer 40

Qy        121 TTCTTCGAAAGTTTAATCTCACCCATCAAAGTAGAGACTTTTTTCAAGGAATTCTGGGAA 180
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Db         41 LeuPheGluSerLeuIleSerProIleLysThrGluThrPhePheLysGluPheTrpGlu 60

Qy        181 CAAAAGCCCCTTCTCATTCAGAGGGATGACCCTGTACTGGCCAAATATTACCAGTCTCTG 240
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Db         81 PheLysLeuThrAspLeuLysSerLeuCysSerArgGlyMetTyrTyrGlyArgAspVal 100

Qy        301 AATGTCTGCCGGAGCATCAGTGGGAAGAAGAAGGTTTTAAATAAGGATGGCAGAGCACAT 360
              ||||||||||||   ::::::|||||||||||||||||||||||||||||:::||||||
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Qy        361 TTTCTTCAGCTGAGAAAAGATTTTGATCAGAAGAGGGCAACAATTCAGTTTCACCAACCT 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy        421 CAGAGATATAAGGATGAGCTGTGGCGGATCCAGGAAAAGCTGGAATGTTACTTTGGGTCC 480
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Db        141 GlnArgPheLysAspGluLeuTrpArgIleGlnGluLysLeuGluCysTyrPheSerSer 160

Qy        481 TTAGTAGGCTCGAATGTGTACATGACTCCTGCAGGATCTCAGGGCCTCCCTCCACATTAT 540
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Db        161 LeuValGlySerAsnValTyrIleThrProAlaGlySerGlnGlyLeuProProHisTyr 180

Qy        541 GATGATGTTGAGGTTTTTATCCTGCAGCTGGAGGGAACGAAACACTGGCGCCTGTACTCC 600
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Qy        601 CCAACTGTGCCCCCTGGCACACGAGTACAGTGTGGAATCTGAGGACCGGATCGGCACACCG 660
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Qy        661 ACACACGACTTCCTGCTGAAGCCTGGAGATTTGTTGTACTTTCCCAGAGGGACCATTCAT 720
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Db        241 GlnAlaAspThrProAlaGlyLeuAlaHisSerThrHisValThrIleSerThrTyrGln 260

Qy        781 AACAATTCATGGGGAGACTGCCTTTTGGATTCCATTTCGGGGTTCGTATTTGACATTGCA 840
              ||||||||||||||||||   |||||||||:::|||||||||   |||||||||   |||
Db        261 AsnAsnSerTrpGlyAspPheLeuLeuAspThrIleSerGlyLeuValPheAspThrAla 280

Qy        841 AAGGAAGATGTGGCATTAAGGAGTGGAATGCCCCGGCGGATGCTCCTGAATGTGGAAACC 900
              ||||||||||||   ||||||:::|||:::||||||::::::||||||   ||||||:::
Db        281 LysGluAspValGluLeuArgThrGlyIleProArgGlnLeuLeuLeu---ValGluSer 299

Qy        901 CCAGCTGATGTAACAAGGAAGTTGAGTGGCTTTCTGAGGACTCTTGCAGACCAGCTCGAG 960
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Qy        961 GGCAGAGAAGAGCTGCTGTCATCAGATATGAAGAAGGACTTCGTCAAGCACAGACTCCCT 1020
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Db        320 GlyThrLysGluLeuLeuSerSerAspMetLysLysAspPheIleMetHisArgLeuPro 339

Qy       1021 CCTTTCTTCGAGGGAAATGGAACGGAGACGATGGACCCAGGTAAACAGTTGCCAAGGTTG 1080
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Db        360 AspSerValValArgLeuGlnPheLysAspHisIleValLeuThrValLeuProAspGln 379

Qy       1141 AATCCATTTGATGAAGCTCAACAAAAGGTGGTTTACATCTATCATTCTCTGAAGAATGTG 1200
              :::      ||||||   |||:::|||:::||||||||||||||||||||||||||||
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Qy       1201 AGGCAGATGCACATGATAGGAGAAGAGGAGGAATCCGAGATTTTCGGTCTTCGCTTTCCT 1260
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Qy       1261 TTATCACATGTGGATGCTCTGAAGCAAATCTGGTGCGGGTCACCAATTCGTGTTAAGGAA 1320
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Qy       1321 CTGAAACTTGACACAGATGAAGAAAAGGAGAACCTGGCACTGTCTCTCTGGTCGGAGTCT 1380
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Seq ID 3 translation

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AAB92553
ID AAB92553 standard; protein; 464 AA.
XX
AC AAB92553;
XX
DT 26-JUN-2001 (first entry)
XX
DE Human protein sequence SEQ ID NO:10739.
XX
KW Human; primer; detection; diagnosis; antisense therapy; gene therapy.
XX
OS Homo sapiens.
XX
PN EP1074617-A2.
XX
PD 07-FEB-2001.
XX
PF 28-JUL-2000; 2000EP-00116126.
XX
PR 29-JUL-1999; 99JP-00248036.
PR 27-AUG-1999; 99JP-00300253.
PR 11-JAN-2000; 2000JP-00118776.
PR 02-MAY-2000; 2000JP-00183767.
PR 09-JUN-2000; 2000JP-00241899.
XX
PA (HELI-) HELIX RES INST.
XX
PI Ota T, Isogai T, Nishikawa T, Hayashi K, Saito K, Yamamoto J;
PI Ishii S, Sugiyama T, Wakamatsu A, Nagai K, Otsuki T;
XX
DR WPI; 2001-318749/34.
XX
PT Primer sets for synthesizing polynucleotides, particularly the 5602 full-
PT length cDNAs defined in the specification, and for the detection and/or
PT diagnosis of the abnormality of the proteins encoded by the full-length
PT cDNAs.
XX
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CC The present invention describes primer sets for synthesising 5602 full-
CC length cDNAs defined in the specification. Where a primer set comprises:
CC (a) an oligo-dT primer and an oligonucleotide complementary to the
CC complementary strand of a polynucleotide which comprises one of the 5602
CC nucleotide sequences defined in the specification, where the
CC oligonucleotide comprises at least 15 nucleotides; or (b) a combination
CC of an oligonucleotide comprising a sequence complementary to the
CC complementary strand of a polynucleotide which comprises a 5'-end
CC sequence and an oligonucleotide comprising a sequence complementary to a
CC polynucleotide which comprises a 3'-end sequence, where the
CC oligonucleotide comprises at least 15 nucleotides and the combination of
CC the 5'-end sequence/3'-end sequence is selected from those defined in the
CC specification. The primer sets can be used in antisense therapy and in
CC gene therapy. The primers are useful for synthesising polynucleotides,
CC particularly full-length cDNAs. The primers are also useful for the
CC detection and/or diagnosis of the abnormality of the proteins encoded by
CC the full-length cDNAs. The primers allow obtaining of the full-length
CC cDNAs easily without any specialised methods. AAH03166 to AAH13628 and
CC AAH13633 to AAH18742 represent human cDNA sequences; AAB92446 to AAB95893
CC represent human amino acid sequences; and AAH13629 to AAH13632 represent
CC oligonucleotides, all of which are used in the exemplification of the

CC present invention
XX
SQ Sequence 464 AA;

Alignment Scores:

Pred. No.:	1.36e-186	Length:	464
Score:	1974.50	Matches:	368
Percent Similarity:	87.7%	Conservative:	40
Best Local Similarity:	79.1%	Mismatches:	56
Query Match:	79.2%	Indels:	1
DB:	4	Gaps:	1

US-10-509-073C-3 (1-1398) x AAB92553 (1-464)

```
Qy          1 ATGCCAAAGAAAGTGAAGCCCACAGGGGATGAGAATGAAGAAGAGTCTGTTCCTTGCAAG 60
              ||||||||||||   ||||||||||||         ||||||         |||||||||
Db          1 MetProLysLysAlaLysProThrGlySerGlyLysGluGluGlyProAlaProCysLys 20

Qy         61 CAGGTGAAAGAGGAGCTACCTAATACGCTTTCTGTATTAAACTTTGACAGCCCCAGTAGT 120
              |||:::|||   |||               |||   ||||||||||||||||||||||||
Db         21 GlnMetLysLeuGluAlaAlaGlyGlyProSerAlaLeuAsnPheAspSerProSerSer 40

Qy        121 TTCTTTGAAAGTTTAATATCACCCATCAAAGTAGAGACATTTTTCAAGGAATTCTGGGAA 180
                 ||||||||||||||||||||||||||   ||||||||||||||||||||||||||||
Db         41 LeuPheGluSerLeuIleSerProIleLysThrGluThrPhePheLysGluPheTrpGlu 60

Qy        181 CAGAAGCCCCTTCTCATTCAGAGAGATGACCCTTCGCTGGCCGCATATTACCAGTCTCTG 240
              ||||||||||||||||||||||||||||||:::||||||   ||||||   ||||||
Db         61 GlnLysProLeuLeuIleGlnArgAspAspProAlaLeuAlaThrTyrTyrGlySerLeu 80

Qy        241 TTCAGCCTCTCAGATCTGAGGAGTCTCTGCAGCCAAGGGCTGTACTATGGAAGAGATGTC 300
              |||   |||:::||||||:::|||||||||||||:::|||:::|||||||||||||||||
Db         81 PheLysLeuThrAspLeuLysSerLeuCysSerArgGlyMetTyrTyrGlyArgAspVal 100

Qy        301 AATGTCTGCCGGTGCATCGGTGGGAAGAAGAAGGTTTTAAATAAGGATGGCAAAGCACAG 360
              ||||||||||||||:::   ||||||||||||||||||||||||||||||||||||||||
Db        101 AsnValCysArgCysValAsnGlyLysLysLysValLeuAsnLysAspGlyLysAlaHis 120

Qy        361 TTTCTTCAGCTGAGAAAAGATTTTGATCAGAAGAGGGCAACAATTCAGTTTCATCAGCCA 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 PheLeuGlnLeuArgLysAspPheAspGlnLysArgAlaThrIleGlnPheHisGlnPro 140

Qy        421 CAGAGATTTAAGGATGAGCTCTGGAGGATCCAGGAAAAGCTGGAATGTTACTTTGGCTCC 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||   |||
Db        141 GlnArgPheLysAspGluLeuTrpArgIleGlnGluLysLeuGluCysTyrPheSerSer 160

Qy        481 TTAGTAGGCTCAAATGTGTACATGACTCCCGCAGGATCTCAGGGCCTTCCTCCACATTAC 540
              ||||||||||||||||||:::||||||||||||||||||||||||||||||||||||||
Db        161 LeuValGlySerAsnValTyrIleThrProAlaGlySerGlnGlyLeuProProHisTyr 180

Qy        541 GACGATGTTGAGGTTTTTATCCTGCAGCTGGAGGGAAGGAAACGTTGGCGCCTGTACTCC 600
              ||||||||||||||||||||||||||||||||||   |||   ||||||||||||
Db        181 AspAspValGluValPheIleLeuGlnLeuGluGlyGluLysHisTrpArgLeuTyrHis 200

Qy        601 CCAACTGTGCCCCTGGCGCGTGAGTACAGTGTGGAGCCTGAGGACCGGATTGGCACACCA 660
              ||||||||||||||||||||||||||||||||||   |||:::|||||||||   |||
Db        201 ProThrValProLeuAlaArgGluTyrSerValGluAlaGluGluArgIleGlyArgPro 220

Qy        661 ACACATGACTTCCTGCTGAAGCCTGGCGATTTGTTGTACTTCCCCAGAGGGACCATTCAC 720
              |||:::|||:::|||||||||||||||||||||||||||||||||||||||||||||||
Db        221 ValHisGluPheMetLeuLysProGlyAspLeuLeuTyrPheProArgGlyThrIleHis 240
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Qy        721 CAGGCAGAAACTCCTTCAGGCCTGGCCCACTCTATTCACCTGACTATTAGCACCTACCAG 780
              ||||||:::||||||:::|||||||||||||||   |||:::||||||||||||||||||
Db        241 GlnAlaAspThrProAlaGlyLeuAlaHisSerThrHisValThrIleSerThrTyrGln 260

Qy        781 AACAATTCATGGGGAGATTACCTTTTGGACTCCATTTCGGGGCTTGTATTTGACATTGCA 840
              ||||||||||||||||||:::|||||||||:::||||||||||||||||||||   |||
Db        261 AsnAsnSerTrpGlyAspPheLeuLeuAspThrIleSerGlyLeuValPheAspThrAla 280

Qy        841 AAGGAAGATGTGGCATTAAGGACTGGAATGCCCAGGCGGATGCTCATGAATGTGGAAACC 900
              ||||||||||||   ||||||||||||:::||||||::::::|||:::   ||||||:::
Db        281 LysGluAspValGluLeuArgThrGlyIleProArgGlnLeuLeuLeu---ValGluSer 299

Qy        901 CCAGCTGACGTAACAAGGAAGTTGAGTGGCTTTCTGAGGACTCTGGCAGACCAGCTCGAG 960
                          ||||||:::||||||||||||||||||||||||||||||:::||||||
Db        300 ThrThrValAlaThrArgArgLeuSerGlyPheLeuArgThrLeuAlaAspArgLeuGlu 319

Qy        961 GGCAGAAAAGAACTGCTCTCATCAGATATGAAGAAGGACTTCGTCATGCACAGACTTCCC 1020
              |||   |||||||||||||||||||||||||||||||||||:::|||||||||||||||
Db        320 GlyThrLysGluLeuLeuSerSerAspMetLysLysAspPheIleMetHisArgLeuPro 339

Qy       1021 CCTTTCTGTGTGGGAAATGGAACAGAGTCAATGAACCCAGGTGGAAAGTTGCCAAGGTTG 1080
              |||:::    |||:::|||   |||         ||||||||||||||||||||||||
Db        340 ProTyrSerAlaGlyAspGlyAlaGluLeuSerThrProGlyGlyLysLeuProArgLeu 359

Qy       1081 AACAGCATAGTAAGACTGCAGTTTAAAGACCACATTGTCCTCACAGTAGGGCCCGATCAG 1140
              :::|||:::||||||||||||||||||||||||||||||||||||   |||||||||
Db        360 AspSerValValArgLeuGlnPheLysAspHisIleValLeuThrValLeuProAspGln 379

Qy       1141 AATCAATCTGATGAAGCTCAACAAAAGGTGGTTTACATCTACCATTCTCTAAAGAATGAG 1200
              :::||||||||||||   |||:::|||:::||||||||||||||||||||||||||||
Db        380 AspGlnSerAspGluThrGlnGluLysMetValTyrIleTyrHisSerLeuLysAsnSer 399

Qy       1201 AGACAGACGCACATGATGGGGAAAGAGGTGGAAACAGAGATTTATGGACTTCGCTTTCCT 1260
              |||:::|||||||||||||||   |||   |||||||||   :::|||||||||||||||
Db        400 ArgGluThrHisMetMetGlyAsnGluGluGluThrGluPheHisGlyLeuArgPhePro 419

Qy       1261 TTATCCTATGTGGACGCTCTGAAGCAAATCTGGTGCGGGTCACCAGTTCGTGTTAAGGAC 1320
              ||||||::::::||||||||||||||||||||||||.          :::   ||||||||
Db        420 LeuSerHisLeuAspAlaLeuLysGlnIleTrpAsnSerProAlaIleSerValLysAsp 439

Qy       1321 CTGAAACTTGGCACAGATGAAGAGAAGGAGAACCTGGCAGTGTCTCTCTGGACAGAGTGT 1380
              |||||||||   |||||||||||||||||:::|||   :::||||||||||||||||||
Db        440 LeuLysLeuThrThrAspGluGluLysGluSerLeuValLeuSerLeuTrpThrGluCys 459

Qy       1381 CTAGTCCACGTGCTC 1395
              |||:::   |||:::
Db        460 LeuIleGlnValVal 464
<!--EndFragment-->
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